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ABSTRACT

Much of the intrinsic wealth of planning and instructional information available from achievement testing programs goes untapped in typical reporting procedures. Large-scale programs reporting only pupil scores and the results of aggregating those scores stop far short of the purposes intended and fail to realize the potential of such information. Providing a rationale for and a description of user-oriented reports and reporting procedures, the discussion focuses on individual pupil performance, class analyses for teachers and counselors, grade-within-school performance for principals and school staff, and system-wide grade performance for central administrative staff. The models used could lead to greater understanding, utilization and implementation of the data. (Author)

LARGE-SCALE STANDARDIZED TESTING PROGRAMS--NEW VISTAS IN USER-ORIENTED REPORTING

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LARGE-SCALE STANDARDIZED TESTING PROGRAMS-- NEW VISTAS IN USER-ORIENTED REPORTING

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SUMMARY

Objectives

Much of the intrinsic wealth of planning and instructional information available from testing programs involving standardized achievement tests goes untapped in typical reporting procedures. Large-scale testing programs which report only the test scores of pupils and the results of aggregating those scores stop far short of the purposes intended by the school system for such programs and fail to realize the availability or potential of such information.

This paper is intended to provide a rationale for and a description of user-oriented reports and reporting procedures. The models used for test-score and item performance reporting could lead to greater understanding, utilization, and implementation of the school system's testing program data.

Perspectives or Theoretical Framework

The major purpose of standardized achievement tests is to provide school personnel with objective and dependable data which can serve as a basis for the evaluation of individual, class and entire grade achievement levels in each of the basic skills. In order to accomplish this purpose, scores are reported for individual pupils; averages are reported for every class at each grade level and averages are reported for every grade tested in each school. In addition, averages for school clusters, for the system at large, and national norms at every grade level make it possible to compare individual and group performance with different reference populations. These data are designed to help the school administrator identify areas of strength and weakness in the instructional program so that programmatic changes might be directed towards those skills that are in need of greater emphasis, of increased "drive" by teachers and supervisors of instruction and of increased attention on the part of those who are involved with curriculum improvement and reorganization.

In addition, the testing program data affords the administrative staff with the basis for a variety of decisions dealing with instructional planning, programming, organization and materials selection as well as resource planning and allocation.

Although the data base is the same, the selection and formating of data for decision-making use varies.

The literature suggests that very little in the way of change or modification of test data for individual reporting or aggregate reporting has occurred. There is the need for some new perspectives related to data display and data use.

The advent of highly efficient, sophisticated computing programs and equipment now make possible data aggregation and analyses that could not be considered in the past. As a result, many users are not aware of possibilities for new approaches in test data applications.

Methods and/or Techniques

The Performance Analysis Record

This record has been developed to provide for pupil, teacher, parent, counselor, etc. an individual report of pupil test performance. Prepared individually for each pupil in triplicate, the record provides converted scores, national percentile ranks of those scores; a section analyzing pupil performance in each subtest giving the percent of items correct, the percent of items incorrect, and percent of items not answered; and a section showing item by item grouped according to the publisher's skills classification whether the item was answered correctly, incorrectly or omitted. (See Sample 1.)

The individual records are aggregated for school and system use.

The Summary Tables

These tables organize the aggregate data by areas tested and provide a school performance distribution based on given ranges of national percentile ranks, and show the relationship of averages to system and national norms in several different contexts.

The tables are provided for several administrative levels -- school and larger administrative units. (See Sample 2.)

Item Analysis Summaries

For each subtest of the battery, the following information is provided:

(1) the numbers of the items in the subtest for which data are given,
(2) the percents of pupils in the grade in the school who completed the entire battery and who answered each item correctly,
(3) the percents of pupils in the publisher's standardization population who completed the entire battery and who answered each item correctly, and
(4) the percents of pupils in the grade in the city who completed the entire battery and who answered each item correctly.

These summaries are provided for larger administrative units as well. (See Sample 3.)

Data Source

The models, format of data, and applications are a result of several years of development and implementation in the School District of Philadelphia.

PHILADELPHIA CITY-WIDE TESTING PROGRAM
DIVISION OF TESTING

RESEARCH AND EVALUATION

CALIFORNIA ACHIEVEMENT TESTS
1970 EDITION

NAME ▶ JOHN DOE
ID NO ▶ 1234567
SCHOOL ▶ SAMPLE SCHOOL
TEACHER ▶ JANE ROE
GRADE ▶ 7
DATE OF TESTING ▶ MAY, 19[illegible]

PERFORMANCE ANALYSIS RECORD

LEVEL 4 FORM A

	READING			MATHEMATICS			LANGUAGE					TOTAL
	VOCAB	COMPR	TOTAL	COMP	CONCEPTS & PROB	TOTAL	AUDG	MECH	USAGE & STRUCT	TOTAL	SPELL	BATTERY
CONVERTED SCORE	597	544	560	382	501	499		443	376	410	407	443
NATIONAL PERCENTILE	87	63	74	10	52	53		22	2	14	12	29
NUMBER OF ITEMS	40	45		48	50			72	50		32	
% OF ITEMS CORRECT (+)	85	60		27	50			40	28		28	
% OF ITEMS INCORRECT (-)	13	29		44	34			57	66		44	
% OF ITEMS NOT ANSWERED	2	11		29	16			3	6		28	

READING

Comprehension

Science

1 +	32 +	
2 +	33 +	
3 −	34 +	
4 +	35 −	
5 −	36 +	
6 −	37 +	
7 +	38 −	
8 +	39 +	
9 +	40 −	
10 −		

Math

1 +	42 −	
2 +	43 −	
3 +	44 +	
4 −	45 +	
5 −		

Ref. Skills

1 +	4 +	
2 +	5 +	
3 +	6 −	

Soc. St.

1 +	12	
2 +	13 −	
3	14 −	
4 −	15 +	
5 −	16	

Facts

1 +	11	
2 +	34 +	
3 −		

Interpret.

1 +	27 +	
2	37 +	
3	38 +	
4	39 +	
5 −	40	
6		

Relations

1 −	28 +	
2 +	30 +	
3 −	36 +	
4 −		

Generalizations

1 +	41 −	
2 −	42 −	
3 +	43 −	
4 −	44 −	
5 +	45 +	
6 −		

Inference

1 +	23 +	
2 +	29 +	
3 +	31 −	
4 +	33 −	
5 −		

MATHEMATICS

Computation

Add

1 +	11 −	
2 +	12 −	
3 +		
4 +	19 −	
5 +	19 +	
6 +	20 +	

Subtract

1 −	15 −	
2 +	16 +	
3	21	
4 +	22	
5 +	23	
6 +	24 −	

Multiply

1 −	35	
2 −	36 −	
3 −	36 −	
4 +	41 +	
5 −	42 −	
6 −	43 −	
7 +	44 −	

Divide

1 −	39	
2 −	40 −	
3 −	45	
4 −	46	

Div. (cont)

1 −	47 −	
2 −	48 −	

Fractions Common

1 +	34	
2	35	
3 −	36	
4 −	40	
5 −	41	
6 +	42	
7	43 −	
8	44 +	
9	45	
10	46	
11 −	46	
12 −	47 −	
13 −	48 −	

Mixed & Improper

1 −	36 −	
2 −	46	
3 −	47 −	
4	48 −	
5		

Finding Com Den

1	35	
2 −	36 −	
3 −	46 −	

Negative Numbers

1 +	22 −	
2	43	
3 +	44 +	
4		
5	23	
6 +	24 −	
7	25 −	
8 +	26 −	
9	27	
10 −	28 +	
11 +	32	
12 −	37	
13 −	38 −	
14 +	42	
15 +	43 −	
16		

Regrouping

1 +	23	
2	24 −	
3 +	25 −	
4	26 −	
5	27	
6 +	28 +	
7	32	
8	37	
9	38 −	
10 +	42	
11 +	43 −	
12		

Money & Decimals

1 +	23	
2 +	32 −	
3 −	39	
4 −	42 −	
5 +	43 −	
6		

Measures

1 −	41	
2 +		

Operations With Zero

1 +	26 −	
2 +	28 −	
3 +	30 −	
4 +	31 −	
5 +	37 −	
6	39	
7 −	42	

Order of Numbers

1	30	
2	32	
3		

Sets

1	2	
2	3	
3		

Concepts & Problems

CONCEPTS

Sentence Expression

1 +	26	
2 +	27 −	
3	28 −	
4	29	
5	30 −	
6	31	
7	32 −	
8	33 −	
9 −	35 −	

Symbols

1 +	20 −	
2 +	21	
3 −	25 −	
4 +	26	
5 +	27 −	
6 −	28 −	
7 −	31	

Measures

1 +	29 −	
2 −	30 −	
3 +	32 +	
4 +	33 −	
5 −	34	
6		

Number Words

1 +	12 +	
2 +		
3		
4		
5		

Decimals & Place Value

1	22	
2 +	24 +	
3 +	26	
4 +	32 +	
5		

Language

1	31	
2	34	
3		

Geometry

1 −	29 −	
2 −	33 −	
3 −	34	

Fractions

1 +	31	
2 +	35	
3 −		

Roman Numeral

1 +		

PROBLEMS

Add

1 +		

Subtract

1 +	11 −	
2	15 −	
3 +	19 −	

Multiply

1 +	9 −	
2 −	10 +	
3 +	12 +	
4 −	15 −	
5		

Divide

1 +	13 +	
2 +	14	
3 −		

Two Step

1 +	10 +	
2 +	11 −	
3 +	15 −	

Money

1 +	13 +	
2 −	14	
3 −	15 +	

Interest Commission Discount

1 +	19	

Percent

1	9 −	3 +
2	10 −	14
3 +	18 −	

Geometry

1 +	8 +	
2	10 +	
3		

Ratio

1	4	
2		

Graphs

1 +		

Proper Adjective

1 −	38 −	
2 −		

Pronoun I

1 +	34 +	

Titles

1 +	31 −	
2 +	36 −	
3 −		

LANGUAGE

Mechanics

CAPITAL

Beginning Sentence

1 +	27 +	
2	38 +	
3 −		

Quotes

1	40 −	
2		

Prop. noun Names

1 −	11 +	
2 −	39 +	
3 −		

Places

1 +	20 +	
2 +	26 +	
3 −	37 −	

Calen

1 +	18 −	
2 +	28 −	

Groups

1 +	33 −	

No Error

1 +	29 −	
2 +	30 +	
3 −		

PUNCTUATION (Col. 1 = Position, Col. 2 = Choice)

Period Sentence

1 −	+	
2	+ +	
3	− +	
4	− +	
5	−	

Question

1	+ −	

Apostro. Passes

1	2	
2	6	

Contract

1	+ −	
2	+ −	
3	+ +	
4	+	
5	+ +	
6	+ +	

Quotes

1	− +	
2	− −	
3	+ +	
4	− −	
5	+ +	2 −
6	− +	3 +

No Error

1	+ +	2 −
2	− −	3 +

Abbrev

1	− −	
2	− −	

Comma Series

1	+ +	
2	− +	

Interrupt

1	− +	
2	+ +	

Clause

1	− −	
2	− +	

Date-Ad

1	+ +	
2	− −	
3	− +	

Corresp

1	− −	

Trnsfrm.

1	+	2 +
3	−	3 −
3	−	3 +

Usage & Struct.

Std. Eng. Case

1 −	26	
2 −	18 −	
3		

Tense

1	21 −	
2 −	24 −	

Number

1	22 +	
2 +	25	
3 −	27 −	

Usage

1 +	16	
2 −	17 +	
3 −	19 −	
4 +	20 −	
5 −	23 −	
6 −	28 −	
7		

Sen. Struc Complete

1 +	39 −	
2 +	40 −	

Incomp

1 −	36 −	

Spelling

Letter Reversal

1 +	25 −	
2		

Suffix

1		

Two Words

1 −		

Vowel + r

1		

Sen. Parts & Functions

Nouns

1 +	30 +	
2 +		

Verbs

1 +	18 −	
2		

Modifiers

1 −	16 −	
2 +		

Prepos

1 −		

Inflec Morph

1 −	30 −	

Silent Let

1 +	7	
2 +	19 +	
3	21 −	
4	28 −	
5 +	30	
6	32 −	

Multi-end. Consonant

1 −	15	
2 +	20 −	
3	24 −	

Dbl. Cons.

1 −	10 +	
2 +	28 −	
3 +	32 −	

Internal Vowel

1 +	23	
2 −	26 −	
3	27 −	
4	31	
5 +		

No Error

1 −	+	
2 +		

SAMPLE 2

THE SCHOOL DISTRICT OF PHILADELPHIA
Office of Research and Evaluation
Division of Testing Services

1973-74 PHILADELPHIA CITY-WIDE TESTING PROGRAM

STANFORD EARLY SCHOOL ACHIEVEMENT TEST - LEVEL I

SUMMARY TABLES FOR MAY 1974 ADMINISTRATION - KINDERGARTEN

SCHOOL SAMPLE DISTRICT NUMBER 9 NUMBER TESTED 122

TABLE 1: SCHOOL PERFORMANCE DISTRIBUTION

TEST AREA	PERCENTAGE OF PUPILS SCORING			
	Below Nat'l 16th %ile	Between Nat'l %iles 16th to 49th	50th to 84th	Nat'l 85th %ile or above
Environment	20	35	32	13
Mathematics	19	31	33	17
Letters and Sounds	8	27	34	31
Aural Comprehension	16	31	39	14
Total	15	31	35	19

TABLE 2: RELATIONSHIP OF SCHOOL AVERAGES TO NORMS

TEST AREA	%ile Rank Based on Nat'l Pupil Norms	%ile Rank Based on Phila. Bldg. Norms	PERCENTAGE OF PUPILS SCORING At or above Nat'l Median
Environment	36	41	45
Mathematics	44	52	50
Letters and Sounds	62	69	65
Aural Comprehension	50	57	53
Total	48	51	54

T 74-124-S

LEVEL E - GRADE 7

TEST R: READING COMPREHENSION

Skills Classification

The skills tested in Test R may be classed under four headings: details, purpose, organization, and evaluation. For each of these four classes, then, the items concerned primarily with the skills involved in that class will be identified. (Many of these items could be readily classified in more than one way; hence, the classification is somewhat subjective.)

Skills: D (Details) - To Recognize and Understand Stated or Implied Factual Details and Relationships
- D-1 To recognize and understand important facts and details
- D-2 To recognize and understand implied facts and relationships
- D-3 To deduce the meaning of words or phrases from context

Work Table

Skill D-1: To recognize and understand important facts and details

Item No.	Skill Measured	Difficulty of Item	Percent of Pupils Answering Correctly			Difference (Nat'l & School) + or -
			Phila.	Nat'l	School	
1	D-1	E	85	85	81	- 4
21	D-1	A	32	38	28	-10
26	D-1	A	41	42	36	- 6
29	D-1	A	42	39	40	+ 1
33	D-1	A	39	39	29	-10
44	D-1	A	50	53	45	- 8
45	D-1	A	54	60	46	-14*
47	D-1	A	56	60	51	- 9
50	D-1	A	39	43	34	- 9
58	D-1	E	67	68	62	- 6
59	D-1	A	53	55	48	- 7
62	D-1	A	44	57	37	-20*
65	D-1	A	29	37	26	-11*
68	D-1	A	33	41	28	-13*
70	D-1	A	51	61	43	-18*
71	D-1	A	45	55	37	-18*
74	D-1	A	33	40	25	-15*
77	D-1	H	25	34	21	-13*

Number of Items	= 18	
Sum of + Differences	=+ 1	
Sum of - Differences	=-191	
Algebraic Sum	=-190	
Average =	Algebraic Sum / 18	=-190/18 = -11

H = Hard; A = Average; E = Easy

* Denotes items having a difference between national and school percentages greater than the average of item difficulty differences for the school.

TABLE 2

LEVEL E - GRADE 7

Work Table

Skill D-2: To recognize and understand implied facts and relationships

Item No.	Skill Measured	Difficulty of Item	Percent of Pupils Answering Correctly			Difference (Nat'l & School) + or -
			Phila.	Nat'l	School	
2	D-2	E	75	81	70	-11*
3	D-2	A	45	39	38	- 1
4	D-2	A	59	52	54	+ 2
5	D-2	E	75	72	71	- 1
7	D-2	E	77	75	73	- 2
8	D-2	A	60	55	56	+ 1
10	D-2	A	61	57	56	- 1
17	D-2	H	33	28	27	- 1
19	D-2	A	44	30	41	+11
20	D-2	A	41	44	40	- 4
22	D-2	E	71	70	68	- 2
23	D-2	A	48	48	40	- 8*
24	D-2	E	72	69	68	- 1
25	D-2	A	53	55	46	- 9*
27	D-2	E	64	65	62	- 3
28	D-2	E	72	69	68	- 1
31	D-2	A	65	64	59	- 5
32	D-2	E	65	67	62	- 5
37	D-2	A	33	35	25	-10*
46	D-2	A	38	42	35	- 7*
48	D-2	H	21	22	17	- 5
49	D-2	A	44	49	37	-12*
51	D-2	A	37	40	32	- 8*
54	D-2	A	33	41	32	- 9*
55	D-2	A	31	37	26	-11*
60	D-2	A	42	48	34	-14*
61	D-2	A	41	45	34	-11*
63	D-2	A	41	49	34	-15*
67	D-2	H	22	25	18	- 7*
69	D-2	A	44	50	34	-16*
72	D-2	A	31	37	26	-11*

Number of Items	= 31
Sum of + Differences	= +14
Sum of - Differences	= -191
Algebraic Sum	= -177
Average = Algebraic Sum / 31	-177 / 31 = -6

H = Hard; A = Average; E = Easy

* Denotes items having a difference between national and school percentages greater than the average of item difficulty differences for the school.

Conclusions

The use of the test data for a variety of decision-making purposes in the School District of Philadelphia appears to provide testimony that an appropriate organization and production of test data reports can enlarge the vistas of users with respect to data applications.

Educational Importance of the Study

As researchers and practioners we need to explore new avenues for data use in the pursuit of ways to improve our instructional programs for our students.

The complex context of education today demands improved decision-making processes. We must, as a profession, respond well to those demands.

The recommendations and complete discussion of the models described in this paper may provide catalytic help for others in their desire to improve test data utilization.